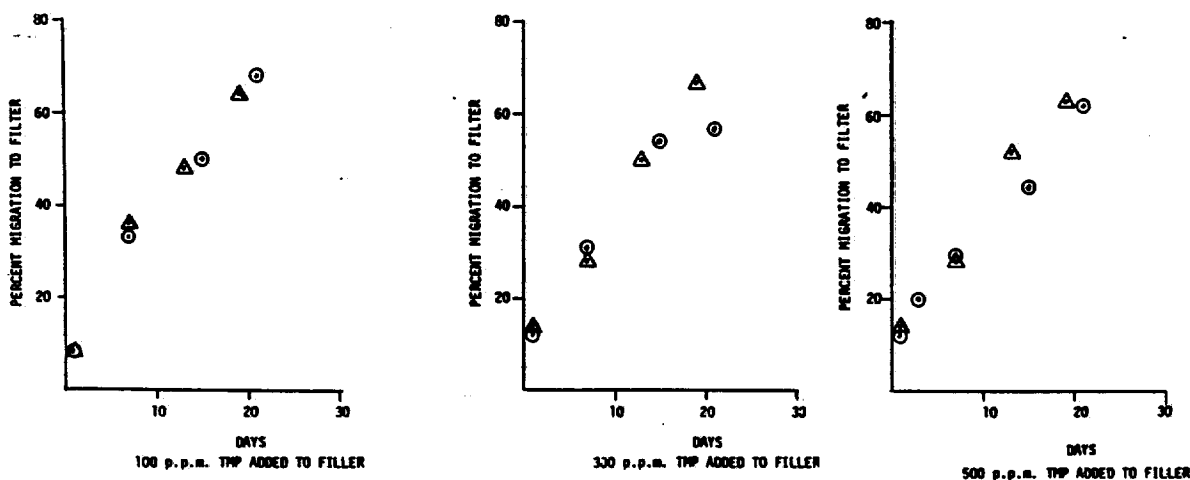


CHARGE NUMBER: 0108  
PROJECT TITLE: Mechanism for Smoke Formation  
PERIOD COVERED: August 1-31, 1981  
PROJECT LEADER: R. A. Kornfeld  
DATE OF REPORT: September 9, 1981

The study of tetramethylpyrazine (TMP) transfer from filler to filter in unsmoked cigarettes is nearly complete. As was mentioned last month, cigarettes stored at  $-25^{\circ}\text{C}$  and  $-85^{\circ}\text{C}$  showed no transfer. The data for the cigarettes stored at room temperature are shown graphically below. Target values for TMP application to filler were 100, 300, and 500 p.p.m. At each TMP filler loading cigarettes were made with filters containing 9% triacetin (O) or no triacetin ( $\Delta$ ). It is evident that transfer to the filter occurs rapidly (i.e. 1/3 of the TMP on the cigarette after seven days is in the filter). Also, it seems as if the presence of triacetin does not have an effect upon the transfer of TMP at room temperature. The filtration of TMP during the smoking process will be investigated using cigarettes whose filters are TMP-free (i.e. those stored at  $-25^{\circ}\text{C}$ ).<sup>1,2</sup>



After considerable effort to reduce reactive surfaces in both pyrolytic and gas chromatographic apparatus, reproducible pyrograms are now being obtained with the nitrogen phosphorus detector. Research will now proceed on the pyrolysis of cooked flavors.<sup>3,4</sup>

Several samples were analyzed using direct introduction mass spectrometry.<sup>4</sup>

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1. Two benzoyl derivatives of polyisoprenoids. (G.Chan)
2. Two TLC spots from the pyrolysis of a glyceryl cyclic carbonate designed to release phenol. (K. Podraza)
3. A synthetic byproduct in the reaction of glyceraldehyde with valspice chloroformate. The mass spectrum obtained was very similar to valspice carbonate. (K. Podraza)

Ether extracts of two cooked flavor samples (submitted by D. Douglas) were analyzed using capillary GC/MS. In addition to a large number of pyrazine derivatives, several aliphatic acids were detected and identified.\*

The following memoranda and reports were written this month:

1. "GC/MS Analysis of Glue Samples G3910, G3802 and G3969" memo to Dr. Tom Van Auken from J. D. Naworal, August 19, 1981.
2. "GC/MS Multiple Ion Detection Analysis of Nicotine in Blood" memo to Dr. Vic DeNoble from J. D. Naworal, August 27, 1981.
3. "WS-14 (N-t-butyl-p-menthane-3-carboxamide) as an Additive to Cigarette Paper", Special Report by A. F. Frisch and R. A. Kornfeld, Accession No. 81-207, August 17, 1981.

#### References

1. L. Brown
2. C. Connolly
3. J. Kang
4. J. Naworal

*Rich Kornfeld*

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